

***Amendments to Claims***

1. (Withdrawn) An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding a mutant of the PS1 polypeptide having the complete amino acid sequence in Figure 1 (SEQ ID NO:2);

(b) a nucleotide sequence encoding a mutant of the mature PS1 polypeptide having the amino acid sequence at positions 83-549 in Figure 1 (SEQ ID NO:2); and

(c) a nucleotide sequence complementary to any of the nucleotide sequences in (a) or (b).

2. (Withdrawn) The nucleic acid molecule of claim 1 wherein said polynucleotide has the complete nucleotide sequence in Figure 2 (SEQ ID NO:3).

3. (Withdrawn) The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence in Figure 2 (SEQ ID NO:3) encoding the mutant PS1 polypeptide having the complete amino acid sequence in Figure 2 (SEQ ID NO:4).

4. (Withdrawn) The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence in Figure 2 (SEQ ID NO:3) encoding the mutant of the mature PS1 polypeptide having the amino acid sequence at positions 83-549 in Figure 2 (SEQ ID NO:4).

5. (Withdrawn) An isolated nucleic acid molecule comprising a polynucleotide which hybridizes under stringent hybridization conditions to a polynucleotide having a nucleotide sequence identical to a nucleotide sequence in (a), (b) or (c) of claim 1.

6. (Withdrawn) An isolated nucleic acid molecule comprising a polynucleotide which encodes the amino acid sequence of an epitope-bearing portion of a mutant PS1 polypeptide having an amino acid sequence in (a) or (b) of claim 1.

7. (Withdrawn) A method for making a recombinant vector comprising inserting an isolated nucleic acid molecule of claim 1 into a vector.

8. (Withdrawn) A recombinant vector produced by the method of claim 11.

9. (Withdrawn) A method of making a recombinant host cell comprising introducing the recombinant vector of claim 8 into a host cell.

10. (Withdrawn) A recombinant host cell produced by the method of claim 13.

11. (Withdrawn) A recombinant method for producing a mutant PS1 polypeptide, comprising culturing the recombinant host cell of claim 10 under conditions such that said polypeptide is expressed and recovering said polypeptide.

12. (Currently Amended) An isolated mutant presenilin 1 (PS1) polypeptide comprising an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence shown in SEQ ID NO: 4;
- (b) the amino acid sequence shown in SEQ ID NO: 28;
- (c) the amino acid sequence shown in SEQ ID NO: 30; and

(d) the amino acid sequence shown in SEQ ID NO: 32; ~~and~~  
(e) ~~the amino acid of sequence of an epitope bearing portion of any~~  
~~one of the polypeptides of (a) - (d).~~

13. (Withdrawn) An isolated antibody that binds specifically to a mutant PS1 polypeptide of claim 12.

14. (Withdrawn) A method for diagnosing a patient having an increased likelihood of contracting Alzheimer's disease, comprising the steps of:

- a) obtaining from a patient a biological sample containing nucleic acid;
- b) incubating said nucleic acid with a probe which is capable of specifically hybridizing to a mutant PS1 gene under conditions and for time sufficient to allow hybridization to occur; and
- c) detecting the presence of hybridized probe, and thereby determining that said patient has an increased likelihood of contracting Alzheimer's disease.

15. (Withdrawn) A method for diagnosing a patient having an increased likelihood of contracting Alzheimer's disease, comprising the steps of:

- a) contacting a biological sample obtained from a patient with an antibody as claimed in claim 13 under conditions and for a time sufficient to allow binding of the antibody to the protein; and
- b) detecting the presence of the bound antibody.

16. (New) An isolated mutant presenilin 1 (PS1) polypeptide comprising an amino acid fragment of at least 13 amino acids in length, wherein said amino acid fragment is selected from the group consisting of:

- (a) the amino acid fragment of SEQ ID NO: 4 containing an arginine at amino acid position 263 of SEQ ID NO: 4, a leucine at amino acid position 264 of SEQ ID NO: 4 and a histidine at amino acid position 269 of SEQ ID NO: 4;
- (b) the amino acid fragment of SEQ ID NO: 28 containing an arginine at amino acid position 263 of SEQ ID NO: 28;
- (c) the amino acid fragment of SEQ ID NO: 30 containing a leucine at amino acid position 264 of SEQ ID NO: 30; and
- (d) the amino acid fragment of SEQ ID NO: 32 containing a histidine at amino acid position 269 of SEQ ID NO: 32.